

BRITISH STANDARD 4001 : Part 2 : 1967

**RECOMMENDATIONS FOR THE
CARE AND MAINTENANCE OF
UNDERWATER BREATHING
APPARATUS**

**Part 2. Standard diving
equipment**

Amendment No. 1
published and effective from 30 November 1982
to BS 4001 : Part 2 : 1967

Recommendations for the care and maintenance of
underwater breathing apparatus

Part 2. Standard diving equipment

Revised text

Page 2. At the foot of the page delete the committee references 'CHE/1' and 'CHE/1/7' and substitute 'PSM/27'.

Foreword. Delete the first three paragraphs and substitute the following:

'This Part of this British Standard was prepared under the authority of the Chemical Engineering Industry Standards Committee and amended under the direction of the Personal Safety Equipment Standards Committee. It gives guidance for the care and maintenance of standard diving equipment to ensure that maximum safety and efficiency are obtained from the apparatus.'

BS 4001 is published in two Parts:

Part 1. Recommendations for the compressed air open circuit type (covering equipment in which compressed air carried in cylinders is fed through a demand valve and breathing tube to a mouthpiece. Exhaled air passes through a non-return valve to the atmosphere).

Part 2. Standard diving equipment.

Attention is drawn to the relevant Statutory requirements:

'Diving Operations at Work Regulations' 1981, Statutory Instrument 1981 No. 399.'

Clause 1.1 Scope. Delete paragraph 2 of this clause and substitute the following.

'The respective appendices give collated recommendations to enable compliance with statutory diving regulations, Health and Safety Diving Operations at Work Regulations 1981 as well as recommendations for a detailed method of test for manual air pump efficiency, and recommendations for the purity of compressed air for human respiration.'

Clause 2.5.2. In line 4, after ‘olive oil’, insert ‘or neatsfoot oil’.

Clause 3.3.1. After the existing text in item (4) and after the first sentence in item (6) insert the following.

‘The use of a patching roller is recommended to ensure good contact and complete removal of trapped air.’

Clause 6.1.1 General. Delete paragraph 1 and substitute the following:

‘Although power driven compressors are normally used as a means of supplying air to the diver, the manual air pump is still occasionally to be found. It should be noted that a manual air pump is not capable of supplying a reserve air supply.’

Clause 6.2.6. In line 5, after ‘detergent’ insert ‘or by steam cleaning’.

Clause 6.5 Compressed air cylinders. Delete paragraph 1 of item (1) and substitute the following:

‘Compressed air for breathing is normally supplied in cylinders which should be in accordance with 4.1 of Part 1 : 1981 of this standard.’

In line 2 of item (3) delete ‘from 1980 lbf/in² (132 atm)’.

Clause 7.4 Strength of telephone breast rope and life-line. In line 2 delete ‘circumference of 1½ in’ and substitute ‘diameter of 8 mm’.

Clause A.1 General. Delete the existing text and substitute the following:

‘Statutory Instrument No. 399 1981, Health and Safety Diving Operations at Work Regulations 1981 requires that diving plant and equipment shall be thoroughly examined by a competent person at specified intervals, and a report of the results of such an examination signed by the competent person.

The following is a recommended examination: ’

Clause A.7 Air compressing plant. Delete the last two paragraphs.

Table 1. Delete the recommendations for ‘Water’ in the right-hand column and substitute the following:

‘0.5 g/m³’.

Immediately below the table, renumber the existing note ‘NOTE 1.’ and insert the following additional note:

‘NOTE 2. At ambient temperature below 4 °C there is a risk of freezing inside the apparatus and particular attention should be given to the dryness of the air under these circumstances. It is recommended that the air should be dried chemically under extreme cold conditions.’

**RECOMMENDATIONS FOR THE
CARE AND MAINTENANCE OF
UNDERWATER BREATHING
APPARATUS**

**Part 2
Standard diving equipment**

BS 4001 : Part 2 : 1967

BRITISH STANDARDS INSTITUTION

INCORPORATED BY ROYAL CHARTER

BRITISH STANDARDS HOUSE, 2 PARK ST., LONDON, W.1

TELEGRAMS: STANDARDS LONDON W1

TELEPHONE: 01-629 9000

UDC 614.811 : 614.894.7 : 626.025

THIS BRITISH STANDARD, having been approved by the Chemical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 26th June, 1967.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 4000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook. The BS Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standard:

BS 1319. Medical gas cylinders and anaesthetic apparatus.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following BSI references relate to the work on this standard:
Committee references CHE/1, CHE/1/7
Draft for comment D65/11403

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CO-OPERATING ORGANIZATIONS

The Chemical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Association of Consulting Engineers

*Board of Trade

British Chemical Plant Manufacturers' Association

*Chemical Industries Association

Coke Oven Managers' Association

*Engineering Equipment Users' Association

Gas Council

Glass Manufacturers' Federation

Institution of Chemical Engineers

Institution of Gas Engineers

Institution of Structural Engineers

United Kingdom Atomic Energy Authority

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this standard:

Associated Offices Technical Committee

British Acetylene Association

British Iron and Steel Federation

British Sub-Aqua Club

British Transport Docks Board

Chief Fire Officers' Association

Confederation of British Industry

Dock & Harbour Authorities Association

Home Office

Institute of Refrigeration

Institution of Fire Engineers

Liquefied Petroleum Gas Industry Technical Committee

Lloyd's Register of Shipping

Metropolitan Police

Ministry of Defence, Air Force Department

Ministry of Defence, Army Department

Ministry of Defence, Navy Department

Ministry of Labour (H.M. Factory Inspectorate)

Ministry of Technology (National Engineering Laboratory)

Royal Society for the Prevention of Accidents

Individual manufacturers and salvage organizations

BRITISH STANDARD RECOMMENDATIONS FOR THE CARE AND MAINTENANCE OF UNDERWATER BREATHING APPARATUS

Part 2. Standard diving equipment

FOREWORD

These recommendations have been prepared under the authority of the Chemical Engineering Industry Standards Committee. They give guidance for the care and maintenance of underwater life supporting equipment to ensure that maximum safety and efficiency may be obtained from the apparatus.

During the preparation of recommendations covering compressed air open circuit underwater breathing apparatus it was decided that similar recommendations would be helpful to users of standard diving equipment and Part 2 was duly prepared.

For convenience the recommendations have been divided into two parts:

Part 1. Compressed air open circuit type (covering self contained and surface demand types).

Part 2. Standard diving equipment.

Attention is drawn to Statutory Instrument 1960 No. 688, The Diving Operations Special Regulations 1960. These regulations apply to diving operations carried out in all factories and in all premises, places, process operations and works in Great Britain to which provisions of Part IV of the Factories Act 1961 with respect to safety and health are applied by sections 125 to 128 of that Act. It is strongly recommended, however, that all diving operations should be conducted so as to conform with these regulations.

NOTE 1. The term 'standard diving equipment' used in these recommendations does not signify that the equipment is to a British Standard, but is the customary description of the helmet type apparatus.

NOTE 2. In place of the customary, but incorrect, use of the pound as a unit of force, the unit called a pound force (abbreviation lbf) has been used in these recommendations. It is that force which, when acting on a body of mass one pound, gives it an acceleration equal to that of standard gravity.

NOTE 3. A short table of metric conversions is given in Appendix D. Other conversions should be based on BS 350, 'Conversion factors and tables'.

RECOMMENDATIONS

1. GENERAL

1.1 Scope. Part 2 of these recommendations gives guidance for the care and maintenance of standard diving equipment.

The respective appendices give collated recommendations for the three monthly periodical examination required by Statutory Regulations, a detailed method of test for manual air pump efficiency, and recommendations for the purity of compressed air for human respiration.

1.2 General. Standard diving equipment is generally accepted as being of rugged construction and, in consequence, care and maintenance tends to be neglected. It is just as susceptible as any other equipment to the corrosive action of salt or contaminated water, the effects of extreme temperatures, and other common causes of deterioration. The very fact that this equipment is apparently robust tends to conceal deterioration unless regular inspection and maintenance is carried out, and it may reach a dangerous degree if neglected. Oil is now commonly met with in all waters where diving takes place and this may have a serious effect upon rubber and fabric components.

Physical damage to diving equipment out of the water is frequently difficult to avoid in the typical conditions found on construction sites or at sea in bad weather. Without regular inspections, the effect of such damage may not be appreciated until a component fails during a subsequent dive with possibly serious results.

The recommendations which follow are intended to ensure the safety of personnel engaged in diving operations and to give guidance for the maintenance of the diving equipment in a form which is known to be practicable under operational conditions, without causing undue extra work or loss of diving time.

2. HELMET AND CORSELET

2.1 Outlet valve

2.1.1 When a new helmet is received, the outlet valve should be stripped and cleaned, and the helmet duct blown through to ensure there is no packing or other foreign matter present.

2.1.2 The valve should be tested for correct functioning before each dive when the diver tests for leaks prior to descending. With the helmet just under water, the diver presses in at the end of the valve stem to hold the valve on its seat and there should be no air leak from the helmet. If the valve does leak, it must be stripped, cleaned and the valve and its seating examined for damage. A damaged valve or valve spring should be replaced by a spare, but if the seating is damaged the helmet should be sent to the makers for this to be renewed.

2.2 Inlet valve

2.2.1 This valve should be tested for correct functioning before each dive. It should also be tested by air pressure every three months or at any time when its correct functioning is in doubt.